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AUTHOR Wallace, Beverly A.
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ABSTRACT

This paper examines the plight of the child with a learning disability who enters a classroom to hear only a foreign language, to misunderstand the accompanying nonverbal signals, and to see only alien symbols written on the board. This child with a learning disability will have difficulty in the classroom unless the teacher applies the basic tenets of the sociocultural perspective in learning, which include: (1) knowledge is a constructive process for giving personal meaning to experience; (2) one's interactions within a particular context influence one's construction of knowledge; and (3) neither knowledge nor context remains stable, but co-evolve as a natural part of human interaction and development. The work of Lev Vygotsky is discussed in light of current understandings of human neurophysiology with attempt to identify the antecedents for unsatisfactory classroom social interactions that exacerbate the learning problems for the child with disabilities. The paper suggests ways for the classroom teacher to address these restraints and provide scaffolded instruction within the context of authentic, real-life situations over an extended period of time to allow the child to reformulate and renegotiate social realities. Contains 22 references. (EH)

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An Understanding of the Role of Socio-Cultural Learning: Using the Past to Maximize Potential for Future Academic Success

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Beverly A. Wallace

The University of Alabama

Tuscaloosa, Alabama

SO 029 220

Bawallac@sa.ua.edu

101322.377@compuserve.com

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Beverly A. Wallace
The University of Alabama
Tuscaloosa, Alabama

Bawallac@sa.ua.edu
101322.377@compuserve.com

Introduction

What if a child enters a classroom to hear only a foreign language, misunderstand the accompanying nonverbal signals, and see only alien symbols written all over the board? I am not writing about a child for whom English is a second language. I am describing the world of a child with learning disabilities, a child who asks questions... often the wrong ones as far as the teacher is concerned... a child for whom the questions... which are legitimate as far as the child is concerned... remain unanswered. What of these children?

The social context for learning is integral to a study of learning and forms the core of sociocultural development theory. According to this theory, social interactions within a cultural context provide the basis for learning. Thus, cognitive activity is a combination of "within the individual" factors, such as the physiology of the person's brain, body, etc., and the "surrounding the individual" factors, including social interactions (Rueda & Moll, 1994). Learning, then, can be understood as the conceptualizations which result. Three basic tenets underlie this definition of learning:

- Knowledge is a constructive process for giving personal meaning to experience;
- Our interactions within a particular context influence our construction of knowledge;
- Neither knowledge nor context remains stable, but co-evolve as a natural part of human interaction and development (Meyer, 1993).

This sociocultural perspective is drawn from psychologists of the sociohistorical school, one of the foremost proponents being Vygotsky. By viewing the sociocultural model of social development as formulated by Vygotsky in light current understandings of human neurophysiology, one can begin to see the antecedents for unsatisfactory classroom social interactions that exacerbate the learning problem(s) for children with disabilities. It becomes easier for us to realize, given these antecedents, that the differences in cognitive skill between the person with learning disabilities and the person who is part of the normal population often lie in the differences in "the development of social outcomes in important life contexts" (Ford, 1995). Furthermore, this development has a physiological basis.

Body

Learning: The Simple to the Complex

To better facilitate discussion, it is germane to understand the process of learning. Learning occurs in an increasingly complex way as the human system develops. Physiologically, learning is considered, in simple terms, to be the process whereby experiences change the nervous system (Carlson, 1994). This suggests that certain physical changes in the body occur as learning takes place. Indeed, attention is aroused, the muscles of the body tighten, and the blood pressure rises as the human system prepares itself for and engages in learning. As learning occurs repeatedly, neurological changes develop the human system so that ever more complex learning occurs. The key factor in this evolution is the development of the cerebral cortex in general and the frontal lobe specifically because these are necessary components for the processes of planning, predicting future events and other executive functions (Berk, 1993). Perceptual, attentional, and memory capacities develop in complexity as the child matures beyond simple arousal patterns to goal-directed behaviors which lead to self-regulated learning, also called adaptive learning. At this level, the learner is able to control frustration to "maintain the intention to learn while enacting effective task strategies in the face of uncertainty - taking charge of one's motivation, emotion, and thinking" (Rohrkemper, 1989). The learner is able to focus long enough on the information to be learned so that the experience becomes part of the learner.

What Learning Disabilities Are...and Aren't

Now that there is an understanding of the general pattern of learning development, it is relevant to define what learning disabilities are...and aren't according to the law, in this case, Public Law 94-142, the Education for All Handicapped Children Act of 1975. This component is important because it provides the legal validation for the developmental phenomenon. The federal definition states that:

> The term "children with specific learning disabilities" means those children who have a disorder in one or more of the basic psychological processes involved in learning. These may involve understanding or in using language, spoken or written, which disorder may manifest itself in imperfect ability to listen, think speak, read, write, spell, or do mathematical calculations. Such disorders include such conditions as perceptual handicaps, brain injury, minimal brain dysfunction,

> dyslexia, and developmental aphasia. Such term does not include children who have learning problems which primarily the result of visual, hearing, or motor handicaps, of mental retardation, of emotional disturbance, or of environmental, cultural, or economic disadvantage.

Various state departments of education revise or modify this definition, but Chalfant (1984) has found a common core of components that constitute the various revisions or modifications. A child with learning disabilities exhibits these characteristics:

- Failure to achieve in academics or school related skills;
- A disorder in one or more of the psychological processes;
- Exclusionary factors;
- Etiologic factors;
- A significant discrepancy between intellectual potential and achievement (Chalfant's study as cited in McDermid, 1989).

Several important implications emerge from this listing. First, "academics and school related skills" include specific course content (math, reading, etc.), as well as cognitive skills (thinking, listening, etc.). This infers that a learning disability may be situated in a particular subject area if the disability is related to course content. In this case, the student may indeed be gifted in one area and have a learning disability in another area, such as is the case of Albert Einstein (Ellis, 1997). The aspect of "a significant discrepancy between intellectual potential and achievement" reinforces these ideas. Indeed, according to Chalfant (1984), a discrepancy clause is included in the criteria for identifying students as learning disabled in 47 states. Furthermore, if the disability is related to cognition, it will likely be generalized to all subjects requiring a particular mode of cognitive functioning (Bråten, 1991).

Second, due to the exclusionary factors, students with learning disabilities are not given this diagnosis if they have another handicapping condition, including mental retardation. Therefore, children with learning disabilities are not mentally retarded.

Third, the inclusion of etiologic factors is based on the belief that learning disabilities have biogenetic roots although the delineation of the actual physiological component is not required for placement. This aspect attaches a medical model to the disorder, an association that can have deleterious effects (Berk & Winsler, 1995). While it is true that a child is born with certain physiological propensities, it is the social environment that delineates and further specifies these. Thus, two children with the same propensities can display very different learning preferences due to their very different social interactions. Keeping in mind the definitions and characteristics of learning and learning disabilities, the applicable tenets Vygotskian theory can now be explored in relation to the student with learning disabilities.

Some Basic Tenets of Vygotskian Theory

A necessary first step in the discussion is an enumeration of the basic tenets. According to Vygotskian theory, development follows this pattern:

- a baby enters the world with a set of biological propensities which set the stage for the developing human child;
- through the context of socialization and education, the child is transformed, ...as learning occurs within the interactions that occur;
- it is through these interactions, furthermore, that the child develops higher cognitive functions, such as planning, self-regulation, motivation, perseverance, goal-directed cognition, and premeditated behaviors (Diaz, Neal, and Amaya-Williams, 1990).

From reading these tenet, it can be deduced that the interactions between a child and significant others greatly influence the direction of development for any child. The significance for this for the child with learning disabilities lies in the very fact that such a child does not function in some ways as the population "norms." Therefore, social interactions between these children and significant others during their various developmental phases may have consequences for them and for others that do not occur among the "normal population" of developing children if others attempt to interact with them in exactly the same ways, especially in the particular areas where the disability(ies) affect cognition. Through an examination of pertinent studies, the Vygotskian model of social development undergirded by the corresponding biology can now be utilized in an interpretation of possible antecedents for unsatisfactory classroom social interactions that contribute to the learning problem(s) for children with learning disabilities.

The Longitudinal Perspective of the Impact of Social Learning on Children with Learning Disabilities

The first tenet of Vygotsky's theory establishes the biogenetic origins of cognitive development. It is important to note that central to Vygotskian theory is a transformation that occurs: the biological processes which are subsumed under the broad conceptualizations of perception, memory, and attention, develop into higher psychological functions (Diaz, Neal, & Amaya-Williams, 1990). It will be remembered that physiologically, learning is considered, in simple terms, the process whereby experiences change the nervous system (Carlson, 1994). One medium through which this occurs is cognition (Zimmerman, 1989). However, there are two additional elements: the affect and the behavior itself. While one may readily observe the behavior, there are additional components that, though not quite so visually apparent, nonetheless are integral facets. All three (called the ABC's of human behavior) are present and must be accounted for in discussing human behavior (Dixon, 1997).

D. and M. Ford have developed and worked extensively with a model for human functioning, The Living Systems Framework (Ford, M. & Ford, D., 1987; Ford, M. 1992). According to their model, the human system is physiologically alerted to the prospect of learning through its arousal (Ford, M., 1992). This arousal is rooted in the affect or emotional component of the human system (Ford, D., 1987). The information received from sensory organs is thought to be first circuited within the brain stem (Carlson, 1994). The activation proceeds into the pertinent areas of the cerebral cortex (Carlson, 1994). Thus the motivating or driving force of the arousal of the system to learn is directly correlated initially to the level of emotional arousal within the physiological system. For Vygotsky, the goal of early development is based on this physiological reality.

For the child who is later diagnosed as learning disabled, certain etiologic propensities may exist which have the potential for compromising the system as it attempts to learn. One of these is temperament. Current experimental studies suggest that infants possess certain inherent temperamental predilections (Rothbart, 1989). These biogenetic predispositions remain stable and affect social interactions. Thus temperamental qualities "interact with cognitive and social factors and moderate experiential effects, while contributing to the development of personality" (Kochanska, 1993; see also studies by Goldsmith et al., 1987 and Goldsmith and Campos, 1986).

At this juncture, the second of Vygotsky's tenets becomes pertinent: through the context of socialization and education, the child is transformed, ...as learning occurs within the interactions that occur. One of the first social interactions in which a baby engages is with significant others in her environment. At this stage of development, the child seeks to balance arousal so that homeostasis produces contentment. This is at this first socialization interaction that can precipitate problems for the child who will later be identified as learning disabled. According to Kochanska (1993), "during the continual, early affective exchanges between the infant and his caregivers, a young child develops a sense of connectedness and the ability to read others' emotions and to react with distress, empathy, and prosocial activity to others' distress" (p. 326). If these interactions produce in the infant and young child too much arousal, the infant will code the event episodically, and negative associations will surround the event. If the child is aroused too little, he will not pay attention to the event so that it is not encoded at all. Only when the arousal level is appropriate will the child interact positively and "learn." As the child develops the ability for higher cognition, the event will dissociate from the source and generalize. In this instance, the child can use the "learning" to act appropriately across a variety of social situations (Kochanska, 1993). At this level, one can state that the child has internalized the learning so that he can utilize the knowledge through cognition. During the toddler years, children use the recalling of caregiver directives in appraising social situations and monitoring their own behavior (Kopp, 1992).

The developmental perspective is one in which the arousal-behavior loop slowly develops into the arousal-cognitive-behavior loop as the frontal lobe develops (Kopp, 1992). In a longitudinal study, Kochanska, Aksan, and Koenig (1995) discovered that mother-child positive affect at the toddler age produced more task-oriented behavior and reports of internalization of rule-governed behavior at the pre-school stage. At first glance, one might suppose that this entails social interactions only. Physiologically, however, because aspects of the system are under-stimulated, regardless of the source, development in any related area is at risk for poor development. In this case, in addition to those areas involved in affect, the frontal lobe is compromised since negative interactions remain situated, not generalizing for accessibility to higher order processing.

Following the pattern of development, the third basic tenet gains significance: it is through these interactions, furthermore, that the child develops higher cognitive functions, such as planning, self-regulation, motivation, perseverance, goal-directed cognition, and premeditated behaviors (Diaz, Neal, and

Amaya-Williams, 1990). As significant others contribute through social interactions to the child's environment, it must be remembered that social interactions include instructions for tasks, rules for behavior, guidelines for play, and most of the other communicative elements involved in what is termed learning. If the toddler has "tuned out" significant others in an attempt to achieve homeostasis, the child has lost, not only the opportunities to learn social conventions, but also other more instructional learning that is closely tied to what is later called academic skill.

Following the logic, then, of the Vygotskian perspective, is it any wonder that some children who enter school:

(1) fail to achieve in academics or school related skills;

(2) are compromised in the functioning of one or more of the psychological processes;

(3) exhibit a significant discrepancy between intellectual potential and achievement (Chalfant's study as cited in McDermid, 1989)?

Conclusion

The thing which identifies the student with learning disabilities as different is this inability to adaptively learn. Vygotskian social learning theory suggests that the source for this inability is rooted in the lack of development of cognitive functioning. And, as we have just seen, this lack has arisen, in large part, from the fact that the child's earliest attempts to modulate the environment have backfired. Due to a cycle of discontent, the child has learned to shut out the very interactions that could have provided the stimulation needed for cognitive development. This means that the child comes to the school environment under-prepared both psychologically and phsyiologically to behave in the ways this environment requires. So what's a teacher to do?

There are several learner constraints that a teacher must acknowledge:

- the social experiences of this child have affected neurological development so that the child is quite possibly incapable of responding in appropriate ways;
- in many cases the child does not know what is and is not appropriate because in an effort to modulate arousal, the child has cut him/herself off from valuable learning in social contexts;

In response to these constraints, the teacher should:

- lead the child through the desired response physically instead of simply telling the child what is appropriate. In this way, the teacher is working with the child as the child constructs the necessary neurological components to learn appropriate behaviors;
- recognize that this will take repeated efforts and support must be withdrawn gradually;
- remember that this child has maladaptively responded across a wide array of social encounters so that will come slowly.

The secret is to provide scaffolded instruction within the context of authentic, real-life situations over an extended period of time to allow the child to reformulate and renegotiate social realities.

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